No. 7900050

THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

Pickseed West, Inc.

Whereas, THERE HAS BEEN PRESENTED TO THE

Secretary of Agriculture

AN APPLICATION REQUESTING A CERTIFICATE OF PROTECTION FOR AN ALLEGED NOVEL VARIETY OF SEXUALLY REPRODUCED PLANT, THE NAME AND DESCRIPTION OF WHICH ARE CONTAINED IN THE APPLICATION AND EXHIBITS, A COPY OF WHICH IS HEREUNTO ANNEXED AND MADE A PART HEREOF, AND THE VARIOUS REQUIREMENTS OF LAW IN SUCH CASES MADE AND PROVIDED HAVE BEEN COMPLIED WITH, AND THE TITLE THERETO IS, FROM THE RECORDS OF THE PLANT VARIETY PROTECTION OFFICE, IN THE APPLICANT(S) INDICATED IN THE SAID COPY, AND WHEREAS, UPON DUE EXAMINATION MADE, THE SAID APPLICANT(S) IS (ARE) ADJUDGED TO BE ENTITLED TO A CERTIFICATE OF PLANT VARIETY PROTECTION UNDER THE LAW.

NOW, THEREFORE, THIS CERTIFICATE OF PLANT VARIETY PROTECTION IS TO GRANT UNTO THE SAID APPLICANT(S) AND THE SUCCESSORS, HEIRS OR ASSIGNS OF THE SAID APPLICANT(S) FOR THE TERM OF eighteen YEARS FROM THE DATE OF THIS GRANT, SUBJECT TO THE PAYMENT OF THE REQUIRED FEES AND PERIODIC REPLENISHMENT OF VIABLE BASIC SEED OF THE VARIETY IN A PUBLIC REPOSITORY AS PROVIDED BY LAW, THE RIGHT TO EXCLUDE OTHERS FROM SELLING THE VARIETY, OR OFFERING IT FOR SALE, OR REPRODUCING IT, IMPORTING IT, OR EXPORTING IT, OR USING IT IN PRODUCING A HYBRID OR DIFFERENT VARIETY THEREFROM, TO THE EXTENT PROVIDED BY THE PLANT VARIETY PROTECTION ACT (84 STAT. 1542, AS AMENDED, 7 U.S.C. 2321 ET SEQ.)

PERENNIAL RYEGRASS

'Blazer'

U.S. PLANT VARIETY PROTECTION OFFICE · U.S. DEPARTMENT OF AGRICULTURE

In Testimony Whereof, I have hereunto set my hand and caused the seal of the Plant Variety Protection Office to be affixed at the City of Washington this 11th day of March in the year of our Lord one thousand nine hundred and eighty-two.

Attest:

Kenneth R. Evans

Acting
Commissioner
Plant Variety Protection Office
Grain Division
Agricultural Marketing Service

John R Block

Secretary of Agriculture

UNITED STATES DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
LIVESTOCK, POULTRY, GRAIN & SEED DIVISION

APPLICATION FOR PLANT VARIETY PROTECTION CERTIFICATE

FORM APPROVED
OMB NO. 40-R3822

No certificate for plant variety protection may be issued unless a completed application form has been received (5 U.S.C. 553).

INSTRUCTIONS: *See Reverse.*

FOR OFFICIAL USE ONLY

1a. TEMPORARY DESIGNATION OF VARIETY: PICKSEED R-34	1b. VARIETY NAME: BLAZER
2. KIND NAME: PERENNIAL RYEGRASS	3. GENUS AND SPECIES NAME: LOLIUM PERENNE L.
4. FAMILY NAME (BOTANICAL): GRAMINEAE	5. DATE OF DETERMINATION: SEPT. 1, 1976
6. NAME OF APPLICANT(S): PICKSEED WEST, INC.	7. ADDRESS (*Street and No. or R.F.D. No., City, State, and ZIP Code*): BOX 888 TANGENT, OREGON 97389
8. TELEPHONE AREA CODE AND NUMBER: (503) 926-8886	
9. IF THE NAMED APPLICANT IS NOT A PERSON, FORM OF ORGANIZATION: (*Corporation, partnership, association, etc.*): CORPORATION	10. IF INCORPORATED, GIVE STATE AND DATE OF INCORPORATION: Oregon
11. DATE OF INCORPORATION: Jan. 12, 1970	

PV NUMBER: 7900050
FILING DATE: 2-28-79
TIME: 3:30 A.M. (P.M.)
FEE RECEIVED: $ 500.00 $ 250.00
DATE: 2-28-79 1/11/82

12. NAME AND MAILING ADDRESS OF APPLICANT REPRESENTATIVE(S), IF ANY, TO SERVE IN THIS APPLICATION AND RECEIVE ALL PAPERS:
1.Mr. W. Kent Wiley,Pickseed West,Inc.,Box 888,Tangent,Oregon 07389
2.Mr. Mike Robinson,Pickseed West,Inc.,Box 888, Tangent,Oregon 07389

13. CHECK BOX BELOW FOR EACH ATTACHMENT SUBMITTED:

- [X] 13A. Exhibit A, Origin and Breeding History of the Variety *(See Section 52 of the Plant Variety Protection Act.)*
- [X] 13B. Exhibit B, Novelty Statement.
- [X] 13C. Exhibit C, Objective Description of the Variety *(Request form from Plant Variety Protection Office.)*
- [ ] 13D. Exhibit D, Additional Description of the Variety.

14a. DOES THE APPLICANT(S) SPECIFY THAT SEED OF THIS VARIETY BE SOLD BY VARIETY NAME ONLY AS A CLASS OF CERTIFIED SEED? *(See Section 83(a). (If "Yes," answer 14B and 14C below.)* [ ] YES [X] NO

14b. DOES THE APPLICANT(S) SPECIFY THAT THIS VARIETY BE LIMITED AS TO NUMBER OF GENERATIONS? [X] YES [ ] NO

14c. IF "YES," TO 14B, HOW MANY GENERATIONS OF PRODUCTION BEYOND BREEDER SEED? [X] FOUNDATION [ ] REGISTERED [ ] CERTIFIED

15a. DID THE APPLICANT(S) FILE FOR PROTECTION OF THIS VARIETY IN OTHER COUNTRIES? [X] YES [ ] NO *(If "Yes," give name of countries and dates.)*
United Kingdom - Nov. 28, 1978
Netherlands - Nov. 16, 1978
Germany - Jan. 24, 1979

15b. HAVE RIGHTS BEEN GRANTED THIS VARIETY IN OTHER COUNTRIES? [ ] YES [X] NO *(If "Yes," give name of countries and dates.)*

16. DOES THE APPLICANT(S) AGREE TO THE PUBLICATION OF HIS/HER (THEIR) NAME(S) AND ADDRESS IN THE OFFICIAL JOURNAL? [X] YES [ ] NO

17. The applicant(s) declare(s) that a viable sample of basic seed of this variety will be furnished with the application and will be replenished upon request in accordance with such regulations as may be applicable.

The undersigned applicant(s) is (are) the owner(s) of this sexually reproduced novel plant variety, and believe(s) that the variety is distinct, uniform, and stable as required in Section 41, and is entitled to protection under the provisions of Section 42 of the Plant Variety Act.

Applicant(s) is (are) informed that false representation herein can jeopardize protection and result in penalties.

W. Kent Wiley
(SIGNATURE OF APPLICANT)

February 23, 1979
(DATE)

Michael Robinson
(SIGNATURE OF APPLICANT)

February 23, 1979
(DATE)

FORM GR-470 (1-78)

· wd 0E:E 64/80/8 p.m

INSTRUCTIONS

GENERAL: Send an original copy of the application and exhibits, at least 2,500 viable seeds, and $500 fee ($250 filing fee and $250 examination fee) to U.S. Dept. of Agriculture, Agricultural Marketing Service, Livestock, Poultry, Grain and Seed Division, Plant Variety Protection Office, National Agricultural Library Building, Beltsville, Maryland 20705. (See section 180.175 of the Regulations and Rules of Practice.) Retain one copy for your files. All items on the face of the form are self-explanatory unless noted below.

ITEM

5 Give the date the applicant determined that he had a new variety based on (1) the definition in section 41(a) of the Act and (2) the date a decision was made to increase the seed.

13a Give: (1) the genealogy, including public and commercial varieties, lines, or clones used, and the breeding method; (2) the details of subsequent stages of selection and multiplication; (3) the type and frequency of variants during reproduction and multiplication and state how these variants may be identified and (4) evidence of uniformity and stability.

13b Give a summary statement of the variety's novelty. Clearly state how this novel variety may be distinguished from all other varieties in the same crop. If the new variety most closely resembles one or a group of related varieties: (1) identify these varieties and state all differences objectively; (2) attach statistical data for characters expressed numerically and demonstrate that these differences are significant; and (3) submit, if helpful, seed and plant specimens or photographs of seed and plant comparisons clearly indicating novelty.

13c Fill in the Exhibit C, Objective Description form, for all characteristics for which you have adequate data.

13d Describe any additional characteristics that are not described, or whose description cannot be accurately conveyed in Exhibit C. Use comparative varieties as is necessary to reveal more accurately the description of characteristics that are difficult to describe, such as, plant habit, plant color, disease resistance, etc.

14a If "YES" is specified (seed of this variety be sold by variety name only as a class of certified seed) the applicant may NOT reverse his affirmative decision after the variety has either been sold and so labeled, his decision published, or the certificate has been issued. However, if the applicant specified "NO," he may change his choice. (See section 180.16 of the Regulations and Rules of Practice.)

15a See section 42 of the Plant Variety Protection Act and section 180.7 of the Regulations and Rules of Practice.

EXHIBIT A

Origin and Breeding History of Blazer Perennial Ryegrass.

1. Blazer perennial ryegrass is an advanced generation synthetic cultivar derived from the progenies of 33 clones derived from three separate breeding composites developed at the New Jersey Agricultural Experiment Station.

The parental germplasm of Breeding Composite M was derived from advanced generation crosses involving plants selected from Diplomat, Omega, Pennfine, Syn F (a late maturing ryegrass synthetic developed by the New Jersey Agricultural Experiment Station), L4H (a selection from a school playground in Batimore, Maryland), K-79 (a 80-clone breeding synthetic derived primarily from germplasm collected from Central Park in New York City), CP-6 (a turf-type ryegrass clone collected from Central Park in New York City) and H-3 (a turf-type ryegrass clone obtained by crossing a crown rust resistant plant selected from PI 197,270 originating in Finland with a plant selected from Diplomat). Over 30,000 seedlings from these crosses were screened for resistance to crown rust (Puccinia coronata Corda var. lolii Brown) and 4080 of the more resistant plants were transferred to a spaced-plant nursery. Two hundred and forty-seven clones were selected from this nursery and transplanted to an isolated polycross nursery. Thirty one of the parental clones of Blazer were subsequently selected from this polycross based on the performance of their progenies in turf trials. These clones were designated M-10, M-13, M-14, M-16, M-18, M-33, M-34, M-36, M-45, M-47, M-71, M-88, M-91, M-101, M-110, M-128, M-135, M-136, M-145, M-162, M-174, M-187A, M-187B, M-190, M-194A, M-211, M-225, M-228, M-232, M-235 and M-905.

Breeding Composite D was developed by screening over 1,000

seedlings of Diplomat for resistance to crown rust. Twenty three rust resistant plants were evaluated in polycross progeny trials under turf maintenance. Clone D-9 was selected as a parent of Blazer.

Breeding Composite A was derived from plants selected from Manhattan, Sprinter, Diplomat, H-3 and S-321. Eighty three crown rust resistant plants were chosen for polycross progeny tests. Clone A-15 was selected as a parent of Blazer.

The parental clones of Blazer were initially selected on the basis of attractive appearance, medium maturity and freedom from disease in spaced-plant nurseries. Polycross progenies of these clones were subsequently evaluated in turf trials maintained at two fertility levels and mowed frequently at a 2 cm cutting height. Turf trials were observed for resistance to the winter brown blight disease incited by Helminthosporium siccans Drechsler and the large brown patch disease caused by Rhizoctonia solani Kuhn as well as rated for turf quality at frequent intervals.

2. Syn II Breeder seed was produced from an isolated spaced-plant nursery of 1485 clonal propagules selected from the 33 most promising progenies. Seed propagation of Blazer is limited to two generations of increase from Breeders seed--one each of Foundation and Certified.

3. No ~~objectionable~~ off-type mature plants or variants have been observed in the multiplication of Blazer perennial ryegrass.

4. Syn II Breeder seed and Syn III Foundation seed have produced turf of comparable quality and acceptable uniformity (Table 20).

EXHIBIT B (Revised)

Blazer perennial ryegrass is a moderately dark green, fine-textured, turf-type variety. It is a medium late maturing variety (Table 4) being 5 days earlier than Manhattan and 7 days earlier than Loretta. Blazer is significantly later in anthesis than Regal (21 days), Citation (20 days), Pennfine (20 days), Derby (19 days), Birdie (18 days), Fiesta (13 days), Dasher (12 days), Omega (11 days), Belle (11 days), and Caravelle (4 days). This variety has shown excellent performance in turf trials in New Jersey (Tables 1, 2, 3, and 21) and Oregon (Table 19). It has the ability to produce a dense, fine-textured turf. In a New Jersey test (Table 11), Blazer produced significantly more tillers per 100 sq. cm. than Pennfine (111), Derby (112), Manhattan (121), Regal (142), Caravelle (174), NK-100 (178), Ensporta (207), NK-200 (216), S-101 (221), Sprinter (227), Venlona (250), S-321 (252) and Linn (279). Blazer also produced finer leaves than Fiesta (0.13 mm), Pennfine (0.13 mm), Citation (0.14 mm), Manhattan (0.16 mm), Birdie (0.18 mm), Regal (0.18 mm), Derby (0.22 mm), Player (0.25 mm), NK-100 (0.27 mm), Sprinter (0.36 mm), S-101 (0.37 mm), Caravelle (0.38 mm), Ensporta (0.38 mm), S-321 (0.41 mm), Venlona (0.47 mm), NK-200 (0.49 mm), and Linn (0.61 mm). Blazer has shown good winterhardiness in a New Jersey test (Table 13) showing significantly less winter injury than a number of other varieties. Blazer showed no winter injury whereas Citation showed 11 percent, Birdie 12 percent, Derby 14 percent, Pennfine 18 percent, Ensporta 24 percent, Venlona 28 percent, NK-100 31 percent, Linn 38 percent, Caravelle 45 percent, S-101 48 percent, and S-321 63 percent. Blazer has demonstrated moderately good resistance to the Rhizoctonia brown patch disease in turf trials in New Jersey (Tables 14, 15, and 16). In a test established August 1974 at North Brunswick, New Jersey Blazer had a Rhizoctonia brown patch disease rating of

6.2 whereas Manhattan rated 5.0, Yorktown rated 4.9, NK-200 rated 3.2, Sprinter rated 3.2, S-321 rated 3.0, Eton rated 2.9, Servo rated 2.9, Linn rated 2.7, Pelo rated 2.5, Sportiva rated 2.4, Caprice rated 2.3, NK-100 rated 2.3, Ensporta rated 2.2, Game rated 2.2, Endura rated 2.1, Compas rated 2.0, Splendor rated 2.0, Combi rated 1.8 and Perma rated 1.7. In a test planted August 1976 at North Brunswick, New Jersey, Blazer had a Rhizoctonia brown patch disease rating of 6.6, whereas, Dasher rated 5.8, Diplomat rated 5.7, Derby rated 5.5, Birdie rated 5.5, Omega rated 5.4, Regal rated 5.4, Pennfine rated 5.2, Manhattan rated 4.8, Yorktown rated 4.4, Idole rated 3.8, Score rated 3.4, S-321 rated 1.9 and S-101 rated 1.8. In a test planted August 1977 at Adelphia, New Jersey, Blazer had a Rhizoctonia brown patch disease rating of 7.4, whereas Diplomat rated 6.6, Regal rated 6.3, Derby rated 6.2, Omega rated 6.0, Birdie rated 5.8, Manhattan rated 5.0, Loretta rated 4.9, Score rated 3.1, NK-100 rated 3.1, Hunter rated 3.0, Caravelle rated 2.9, Sprinter rated 2.5, NK-200 rated 2.1, Linn rated 2.0, Venlona rated 1.9, S-321 rated 1.9, Ensporta rated 1.8, and S-101 rated 1.7. Blazer has shown good resistance to the winter brown blight disease incited by Drechslera spp. in turf trials in both New Jersey and Oregon. In a test at North Brunswick, New Jersey (Table 17), Blazer showed significantly less damage from the winter brown blight disease than many other varieties. Blazer had a rating of 7.3, whereas Fiesta rated 6.0, Dasher rated 5.8, NK-200 rated 5.0, S-321 rated 5.0, Game rated 5.0, NK-100 rated 5.0, Eton rated 4.7, Derby rated 4.6, Linn rated 4.3, Birdie rated 4.2, Pennfine rated 4.0, Citation rated 3.6, and Ensporta rated 3.0. In turf trials near Hubbard, Oregon (Table 18), Blazer showed 11.7 percent damage, whereas Dasher showed 19.0 percent damage, Derby showed 19.7 percent damage, Loretta showed 21.3 percent damage, Birdie showed 22.2 percent damage, Fiesta showed 24.2 percent damage, Pennfine showed 25.0 percent damage, Linn showed 26.7 percent damage, Citation showed 35.4 percent damage, NK-200 showed 44.2 percent damage, and S-101 showed

45.0 percent damage.

Blazer most closely resembles Yorktown II. However, the varieties differ in number of characteristics as follows:

1) Yorktown II has a moderately dark bluish green color whereas Blazer has a moderately dark green color with less of a bluish cast.

2) Blazer produced plants that were 5.4 cm taller (Table 5), with flag leaves that were 1.0 mm wider (Table 6), that had an average of 2.1 more florets per spikelet (Table 8), had glumes that averaged 0.9 mm longer (Table 8), had ~~90~~ 10 Ext 6/10/81 percent purple spikes versus ~~8~~ 92 Ext 6/10/81 percent for Yorktown II (Table 10) and had 9 percent purple anthers versus 70 percent for Yorktown II (Table 10) in a seed yield trial near Hubbard, Oregon.

3) Yorktown II produced 693 tillers per 100 sq. cm. in a turf trial at Adelphia, New Jersey, whereas, Blazer produced 558 (Table 11).

The data on mature plant height, flag leaf width, number of florets per spikelet, spike color and anther color were obtained from replicated, randomized seed yield trials grown near Hubbard, Oregon. The data presented are the means of 120 measurements (60 measurements in each of two replications). Statistical significance of the differences claimed are demonstrated by the use of the standard errors of the means presented in tables, 5, 6, and 8. The standard error of a mean (SE or $s_{\bar{x}}$) is a very good statistic for comparing means. It is considered more useful and more conservative than the LSD value frequently used for this purpose. In table 5 Blazer is shown as having a mature plant height of 76.8 cm with the standard error of the mean being 0.63 cm. The 0.95 fiducial interval would be $76.8 \pm t\ .05\ s_{\bar{x}} = 76.8 \pm 1.98\ (0.63) = 76.8 \pm 1.25 =$ 75.6 to 78.0. Yorktown II is shown as having a mature plant height of 71.4 with the standard error of the mean being 0.70 cm. The 0.9 5 fiducial interval would be 71.4 ± 1.4 or 70.0 to 72.8. The fiducial intervals for the two varieties do not overlap. Similar calculations show that Blazer and Yorktown II differ statistically in flag leaf width and number of florets per spikelet.

PHOTOCOPY OF STATEMENT IN LETTER FROM MIKE ROBINSON OF PICKSEED WEST, INC. DATED DECEMBER 4, 1981. E-5 12/8/81

Table 1. Performance of perennial ryegrass cultivars and selections at Adelphia, New Jersey in test seeded August 30, 1977.

Cultivar or selection	Turf performance score 9 = best															
	Dec. 2 1977	Mar. 22 1978	Apr. 10 1978	May 8 1978	May 25 1978	June 13 1978	July 14 1978	Aug. 2 1978	Aug. 17 1978	Aug. 25 1978	Aug. 29 1978	Sept. 11 1978	Oct. 6 1978	Nov. 4 1978	Dec. 2 1978	Avg.
1. Blazer	7.7	5.5	7.8	8.0	7.9	7.5	8.0	7.7	6.7	6.8	7.2	7.8	8.3	7.8	7.7	7.6
2. Yorktown II	7.3	5.6	7.0	8.0	7.0	6.8	7.7	7.7	7.0	6.8	6.5	7.0	7.3	7.7	7.7	7.1
3. Belle	7.3	5.2	7.3	7.7	6.7	6.3	7.7	7.0	6.3	7.0	7.0	7.0	7.3	7.3	7.3	7.0
4. Fiesta	7.2	5.3	7.2	7.0	6.2	6.3	6.8	7.3	6.5	6.8	6.8	7.5	7.7	7.5	7.3	6.9
5. Diplomat	6.8	5.7	7.2	7.5	6.9	6.3	6.7	6.8	6.3	6.7	6.3	6.7	7.2	7.0	7.5	6.8
6. Dasher	7.0	5.1	6.8	7.0	5.7	6.3	7.5	7.3	6.5	6.7	6.8	7.2	7.5	7.5	7.5	6.8
7. Citation	5.0	4.3	5.2	6.7	5.5	6.3	7.2	7.2	6.8	6.8	6.7	7.8	7.2	6.7	6.8	6.4
8. Omega	7.2	5.3	7.2	7.2	6.7	6.0	6.7	6.0	5.5	5.8	5.7	6.2	6.3	6.7	7.2	6.4
9. Regal	6.2	5.3	6.2	6.0	5.0	6.7	7.0	6.7	6.2	6.3	6.3	6.2	6.5	5.8	6.0	6.2
10. Loretta	5.7	5.2	5.8	7.7	7.9	7.7	6.7	5.3	4.7	4.5	4.5	6.2	6.5	6.8	6.7	6.1
11. Derby	5.7	4.5	5.2	6.0	5.7	6.5	7.2	6.5	5.7	6.3	6.2	6.2	5.8	6.7	6.2	6.0
12. Birdie	5.7	4.9	5.2	6.3	5.9	5.8	6.5	5.8	5.7	5.8	6.0	5.8	5.3	6.7	6.5	5.9
13. Pennfine	5.3	3.9	4.8	6.2	5.3	6.3	7.0	6.0	5.8	5.7	5.8	5.7	5.8	6.2	6.7	5.8
14. Manhattan	6.7	5.6	5.3	6.8	7.0	5.8	5.7	4.7	4.5	4.5	4.5	4.7	5.8	6.0	6.7	5.6
15. Hunter	5.8	5.3	5.7	7.0	7.7	6.0	4.7	3.5	3.5	2.7	2.8	3.3	4.2	5.0	5.0	4.8
16. Caravelle	7.0	3.4	2.8	6.0	7.2	5.2	3.5	3.0	2.7	2.8	2.8	3.2	5.8	5.2	5.0	4.4
17. Score	5.0	3.9	5.3	5.8	6.9	5.5	4.3	3.5	3.3	2.8	2.8	3.2	4.0	4.7	4.7	4.4
18. Sprinter	5.0	3.8	4.5	5.7	6.5	4.7	3.5	2.7	2.8	2.2	2.3	2.7	3.0	4.0	4.0	3.8
19. NK-100	4.2	3.7	3.7	3.7	3.7	4.3	3.7	2.8	3.2	3.2	3.3	3.0	3.2	3.7	3.2	3.5
20. NK-200	5.5	4.5	4.3	5.0	4.7	4.2	3.5	2.3	2.3	2.2	1.8	2.0	2.3	3.5	3.7	3.5
21. Ensporta	4.3	2.5	3.7	4.0	6.2	5.0	3.5	2.2	2.3	1.2	1.3	2.0	3.0	4.0	3.7	3.3
22. Venlona	4.8	4.8	3.5	3.8	4.0	4.5	3.0	2.0	2.2	1.7	1.5	2.2	2.3	3.0	3.0	3.1
23. S-321	3.3	1.8	2.0	2.8	2.9	3.0	2.5	1.7	2.2	1.7	1.8	2.2	2.5	3.0	2.3	2.4
24. S-101	3.0	1.3	1.0	2.0	3.8	1.7	2.0	1.3	1.8	1.3	1.5	1.2	2.3	2.5	2.5	2.0
25. Linn	3.0	2.3	2.0	2.2	2.2	2.3	1.8	1.2	1.2	1.2	1.0	1.5	1.3	2.2	1.8	1.8
LSD .05	0.6	0.7	1.0	0.5	0.7	0.7	0.7	0.7	0.6	0.8	0.7	0.7	0.8	0.7	0.8	

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Table 2. Performance of perennial ryegrass cultivars and selections in turf trials seeded August 1976 at North Bruswick, New Jersey.

	Turf performance score 9 = best																	
Variety	Nov 5 '76	Apr 20 '77	Apr 25 '77	May 5 '77	Jun 10 '77	July 4 '77	July 7 '77	Aug 5 '77	Aug 11 '77	Aug 18 '77	Aug 22 '77	Nov 3 '77	Dec 2 '77	Dec 23 '77	Dec 31 '77	Avg.	July 1978 avg.	2 yr. avg.
Blazer	6.9	6.4	7.1	6.5	6.6	6.4	6.7	6.7	6.5	6.7	6.9	7.2	6.5	7.4	7.6	6.8	6.6	6.7
Yorktown II	6.5	6.3	7.2	7.0	7.3	7.2	6.8	6.8	6.2	7.8	6.8	7.5	7.2	6.5	7.3	7.0	6.2	6.6
Fiesta	5.9	6.4	6.5	6.0	6.1	6.1	6.0	6.1	6.1	6.5	6.6	7.5	6.9	6.1	6.6	6.4	6.8	6.6
Belle	6.1	6.4	6.6	6.3	6.4	6.0	5.8	5.9	6.0	6.3	6.2	7.2	7.2	6.3	6.7	6.4	6.4	6.4
Citation	5.0	6.2	6.6	5.8	6.2	6.5	6.7	6.4	6.5	6.7	6.3	5.6	4.5	4.1	4.2	5.8	6.3	6.1
Diplomat	5.2	6.0	6.9	6.2	6.2	6.0	6.1	5.2	5.6	5.3	5.4	6.4	6.8	6.7	7.2	6.1	5.9	6.0
Regal	5.7	5.7	6.0	5.2	5.7	5.3	5.7	5.1	5.2	5.2	5.1	7.2	5.7	5.0	5.7	5.6	5.9	5.8
Derby	5.4	5.7	5.8	5.2	5.8	5.7	6.0	5.5	5.3	5.0	5.1	6.7	5.7	4.9	5.4	5.6	5.9	5.8
Dasher	5.6	6.2	6.4	5.2	5.4	5.6	5.9	5.4	5.4	5.3	5.6	6.7	6.6	6.1	6.3	5.9	5.4	5.7
Yorktown	6.5	6.0	6.5	6.2	5.9	5.1	5.5	4.0	3.9	4.0	4.1	6.6	6.9	6.2	6.9	5.6	5.7	5.7
Omega	5.8	6.2	6.3	5.8	5.7	5.3	5.3	5.0	4.7	4.8	5.0	6.8	7.0	6.2	7.5	5.8	5.4	5.6
Birdie	5.3	5.5	5.5	4.8	5.0	6.0	6.0	6.0	6.0	5.8	6.0	6.5	4.3	3.3	3.5	5.3	5.1	5.2
Pennfine	5.2	5.4	5.6	4.8	5.7	5.6	5.7	5.2	5.1	5.3	5.2	5.9	4.6	3.6	4.2	5.1	4.9	5.0
Manhattan	5.3	5.3	6.0	5.6	5.5	4.7	4.6	3.6	3.6	3.4	3.9	6.3	6.1	6.1	6.4	5.1	4.7	4.9
Score	5.0	5.0	5.7	5.3	4.3	4.3	4.0	2.7	3.0	3.7	3.7	6.3	5.7	4.7	5.3	4.6	3.5	4.1
S-321	3.8	3.5	4.3	3.3	3.5	3.0	2.5	2.0	2.0	2.3	2.0	4.0	3.0	2.5	2.8	3.0	1.8	2.4
S-101	3.0	4.0	4.5	3.5	3.3	3.0	2.3	1.8	2.0	2.0	2.0	3.5	2.5	2.0	2.3	2.8	1.6	2.2
LSD .05	0.7	0.8	0.8	0.9	0.7	0.9	0.6	0.7	0.9	0.7	0.8	0.7	0.8	0.6	0.7		0.6	

Table 3. Performance of perennial ryegrass varieties at North Brunswick, New Jersey in test seeded August 1974.

Variety	1974 1975 Avg	1976 Avg	Turf performance score 9 = best Apr 11 '77	Apr 25 '77	Apr 29 '77	Aug 5 '77	Aug 11 '77	Aug 24 '77	Dec 6 '77	Dec 23 '77	1977 Avg	1974 to 1977 Avg
Yorktown II	6.5	7.4	9.0	7.0	8.0	8.0	8.0	8.0	9.0	8.0	8.1	7.3
Blazer	6.6	6.9	7.0	7.3	7.1	5.3	5.5	6.5	7.4	7.1	6.7	6.7
Fiesta	6.6	6.6	6.8	7.0	6.8	5.2	5.4	6.4	6.4	6.2	6.3	6.5
Diplomat	6.2	6.4	6.9	7.0	7.2	5.2	5.6	6.0	6.4	6.9	6.4	6.3
Dasher	6.1	6.3	6.5	6.7	6.5	5.1	5.3	6.2	6.3	6.3	6.1	6.2
Omega	6.0	6.2	6.5	6.7	7.2	4.5	5.5	6.0	6.5	6.7	6.2	6.1
Citation	6.0	6.3	6.5	6.7	5.8	6.5	6.2	7.1	4.5	4.1	5.9	6.1
Yorktown	6.0	6.2	6.5	7.0	6.5	5.0	4.0	5.5	6.5	6.5	5.9	6.0
Derby	5.6	5.9	6.0	6.0	5.5	5.7	5.0	5.9	6.4	5.6	5.8	5.8
Birdie	5.6	5.7	6.4	5.8	5.2	5.6	5.7	6.3	4.6	4.3	5.5	5.6
Pennfine	5.4	5.3	6.0	5.2	5.0	5.4	5.4	5.9	4.1	4.0	5.1	5.3
Manhattan	4.8	5.1	5.8	6.0	5.8	4.1	4.2	4.7	5.4	5.8	5.2	5.0
NK-200	4.1	3.9	3.2	5.5	5.0	2.5	3.0	3.0	3.2	2.7	3.5	3.8
Eton	4.1	4.0	3.0	5.5	5.0	2.2	2.2	2.5	3.0	2.2	3.2	3.8
Sprinter	3.3	3.4	4.3	5.7	4.3	3.3	3.3	3.7	4.3	4.0	4.1	3.6
Servo	3.8	3.5	3.2	4.0	3.5	3.2	2.5	2.2	3.2	2.7	3.1	3.5
Pelo	3.0	3.2	3.7	4.5	4.5	2.5	2.2	2.0	2.7	3.0	3.1	3.1
Ensporta	2.8	3.1	4.0	4.5	3.5	2.7	2.0	2.7	3.2	3.0	3.2	3.0
S321	3.1	3.1	3.2	3.2	2.5	2.7	2.5	2.7	2.2	2.0	2.6	2.9
Caprice	2.8	2.7	3.5	3.0	3.2	2.5	2.5	2.0	2.0	2.2	2.6	2.7
Sportiva	2.9	2.7	3.0	3.7	3.0	2.2	2.0	2.2	2.0	2.0	2.5	2.7
NK100	2.7	2.6	3.5	3.2	3.5	2.7	2.2	2.0	2.2	2.0	2.7	2.7
Game	2.8	2.4	3.0	2.5	2.2	2.2	2.0	2.0	2.2	1.7	2.2	2.5
Splendor	2.8	2.4	3.0	3.0	2.2	2.0	2.0	2.0	2.0	1.7	2.2	2.5
Endura	2.6	2.5	3.5	3.2	2.5	2.5	2.2	2.0	2.0	2.0	2.5	2.5
Compas	2.7	2.5	2.5	2.5	2.0	2.0	2.0	2.0	1.7	2.0	2.1	2.4
Combi	2.3	2.1	2.5	2.5	2.0	2.0	2.0	2.0	1.7	1.7	2.1	2.2
Perma	2.1	1.9	3.0	3.5	3.0	2.0	3.0	2.0	2.5	2.0	2.6	2.2
Linn	2.6	2.2	2.5	1.5	1.2	2.0	2.0	2.0	2.0	1.5	1.8	2.2
LSD at 5%	0.9	0.7									0.9	1.0

Table 4. Maturity ratings of perennial ryegrass cultivars and selections near Hubbard, Oregon during 1978.

	Cultivar or selection	Date of initial 10% anthesis
1.	Regal	May 25
2.	Citation	May 26
3.	Pennfine	May 26
4.	Derby	May 27
5.	Birdie	May 28
6.	Fiesta	June 2
7.	Dasher	June 3
8.	Belle	June 4
9.	Omega	June 4
10.	Caravelle	June 11
11.	Blazer	June 15
12.	Yorktown II	June 15
13.	Manhattan	June 20
14.	Loretta	June 22
	LSD .05	2.5 days

Table 5. Mature plant height and spike length measurements of perennial ryegrass cultivars and selections grown near Hubbard, Oregon during 1978.

Cultivar or selection	Mature plant height cm	SE	Spike length cm	SE
1. Derby	87.7	0.81	23.3	0.46
2. Birdie	85.5	0.80	25.5	0.46
3. Pennfine	85.0	0.81	23.5	0.44
4. Fiesta	83.2	0.67	22.5	0.50
5. Dasher	81.1	0.56	23.3	0.49
6. Omega	80.1	0.52	22.0	0.32
7. Belle	79.2	0.57	22.1	0.40
8. Manhattan	78.4	0.76	24.6	0.34
9. Blazer	76.8	0.63	22.3	0.40
10. Loretta	76.2	0.84	20.7	0.44
11. Citation	75.2	0.76	22.9	0.41
12. Yorktown II	71.4	0.70	21.7	0.38
13. Regal	69.5	0.70	21.2	0.53
14. Caravelle	62.3	0.48	17.6	0.45

Table 6. Comparison of perennial ryegrass cultivars and selections for flag leaf length and flag leaf width in test grown near Hubbard, Oregon during 1978.

Cultivar or selection	Flag leaf length cm	SE	Flag leaf width mm	SE
1. Birdie	19.7	0.39	6.4	0.18
2. Pennfine	18.7	0.44	6.7	0.19
3. Derby	18.6	0.41	6.4	0.21
4. Omega	18.6	0.45	5.9	0.18
5. Fiesta	18.4	0.36	5.7	0.17
6. Manhattan	18.2	0.50	5.9	0.21
7. Blazer	18.0	0.36	5.9	0.17
8. Yorktown II	18.0	0.38	4.9	0.14
9. Dasher	17.8	0.35	5.9	0.18
10. Belle	17.7	0.35	6.0	0.16
11. Loretta	17.1	0.53	6.5	0.23
12. Regal	16.8	0.45	6.3	0.19
13. Caravelle	16.6	0.43	5.9	0.17
14. Citation	16.3	0.41	6.2	0.22

Table 7. Seed yield of perennial ryegrass cultivars at Hubbard, Oregon in test harvested summer 1978.

Cultivar	Seed yield lb/A
1. Fiesta	1029
2. Citation	983
3. Derby	890
4. Regal	855
5. Caravelle	850
6. Omega	826
7. Birdie	817
8. Belle	701
9. Yorktown II	668
10. Loretta	623
11. Manhattan	584
12. Blazer	576
13. Dasher	573
14. Pennfine	556
LSD at 5%	348

Table 8. Comparison of perennial ryegrass cultivars and selections for number of florets per spikelet, glume length and weight per ten spikes in test grown near Hubbard, Oregon during 1978.

Cultivar or selection	Number of florets per spikelet		Glume length		Weight per 10 spikes
	No.	SE	mm	SE	mg
1. Regal	10.9	0.32	6.6	0.23	1860
2. Citation	10.5	0.25	6.7	0.19	3810
3. Fiesta	10.4	0.25	7.9	0.28	
4. Pennfine	10.4	0.27	7.7	0.17	2600
5. Belle	10.3	0.25	7.6	0.21	2800
6. Dasher	9.7	0.26	8.5	0.27	2160
7. Birdie	9.7	0.32	7.5	0.22	3976
8. Caravelle	9.5	0.27	7.5	0.26	1900
9. Blazer	9.5	0.21	7.2	0.22	1080
10. Derby	9.1	0.27	7.8	0.27	3620
11. Omega	8.9	0.16	8.0	0.26	1516
12. Manhattan	8.2	0.26	7.8	0.22	670
13. Loretta	7.5	0.26	7.2	0.21	1600
14. Yorktown II	7.4	0.25	6.3	0.18	1560

Table 9. Stem rust (*Puccinia graminis*) ratings on perennial ryegrass cultivars and selections taken July 2, 1978 in seed yield trials near Hubbard, Oregon.

Cultivar or selection	Stem rust rating (9 = most resistant)
1. Loretta	6.0
2. Caravelle	5.0
3. Manhattan	4.0
4. Pennfine	4.0
5. Yorktown II	4.0
6. Birdie	3.5
7. Blazer	3.5
8. Citation	3.5
9. Omega	3.5
10. Belle	3.0
11. Dasher	3.0
12. Derby	2.0
13. Fiesta	2.0
14. Regal	2.0

Table 10. Comparison of perennial ryegrass cultivars and selections grown near Hubbard, Oregon for spike color and color of anthers.

Cultivar or selection	Spike color		Anther color		
	Green %	Purple %	Purple %	White %	Yellow %
1. Caravelle	97	3	1	2	97
2. Birdie	96	4	2	38	60
3. Citation	95	5	5	80	15
4. Derby	95	5	5	45	50
5. Fiesta	95	5	5	5	90
6. Pennfine	95	5	5	75	20
7. Regal	92	8	5	45	50
8. Blazer	90	10	9	9	82
9. Dasher	90	10	5	5	90
10. Omega	90	10	25	0	75
11. Manhattan	80	20	3	72	25
12. Loretta	72	28	10	80	10
13. Belle	70	30	10	0	90
14. Yorktown II	8	92	70	10	20

Table 11. Tiller densities and leaf width measurements of perennial ryegrass cultivars and selections grown at Adelphia, New Jersey.

		Tillers[1] 100 cm^2 12/78	Leaf[2] width (mm) 12/78
1.	Yorktown II	693	1.76
2.	Diplomat	583	1.85
3.	Fiesta	576	1.92
4.	Dasher	559	1.84
5.	Blazer	558	1.79
6.	Belle	531	1.87
7.	Birdie	527	1.97
8.	Loretta	526	1.75
9.	Omega	517	1.86
10.	Citation	517	1.93
11.	Pennfine	447	1.92
12.	Derby	446	2.01
13.	Manhattan	437	1.95
14.	Player	419	2.04
15.	Regal	416	1.97
16.	Caravelle	384	2.17
17.	NK-100	380	2.06
18.	Ensporta	351	2.17
19.	NK-200	342	2.28
20.	S-101	337	2.16
21.	Sprinter	331	2.15
22.	Venlona	308	2.26
23.	S-321	306	2.20
24.	Linn	279	2.40
	$LSD_{.05}$=	72	0.11

[1] Tiller counts based on the average of six replications

[2] a. Leaf width data based on the average of ten leaves from each of six applications.
b. Measurements were taken 2mm. from the collar of the second fully expanded leaf counting from the top of the tiller.

[3] Test established August 1977, mowed at 2 cm and maintained at moderately high fertility. Tiller counts and leaf measurements were made during December 1978.

Table 12. Seed characteristics of perennial ryegrass cultivars and selections.

Cultivar or selection	Seed weight mg. per 1000 seeds	Total width of 10 seeds mm.	Total length of 10 seeds mm
1. NK200	2,205	13.3	57.4
2. Linn	2,093	13.2	60.2
3. Pennfine	1,842	12.2	50.9
4. Dasher	1,798	12.1	53.5
5. Manhattan	1,796	11.5	50.6
6. Belle	1,510	12.3	52.4
7. Derby	1,502	11.6	51.4
8. Fiesta	1,306	13.0	55.7
9. Blazer	1,200	12.6	56.1
10. Loretta	1,109	10.3	42.0
LSD .05	42	0.8	3.6

Only one seed lot of each entry was examined.

Table 13. Percent winter injury of perennial ryegrass cultivars and selections in test seeded August 30, 1977 at Adelphia, New Jersey.

Cultivar or selection		Percent winter injury March 30, 1978
1.	Blazer	0
2.	Yorktown II	0
3.	Belle	0
4.	Fiesta	0
5.	Diplomat	0
6.	Dasher	0
7.	Omega	0
8.	Regal	0
9.	Manhattan	0
10.	Score	4
11.	NK200	4
12.	Loretta	5
13.	Hunter	8
14.	Sprinter	8
15.	Citation	11
16.	Birdie	12
17.	Derby	14
18.	Pennfine	18
19.	Ensporta	24
20.	Venlona	28
21.	NK100	31
22.	Linn	38
23.	Caravelle	45
24.	S-101	48
25.	S-321	63
	LSD at 5%	7.3

TABLE 14. Reaction of perennial ryegrass cultivars and selections to the Rhizoctonia brown patch disease in turf trials established August 1974 at North Brunswick, New Jersey.

Cultivar or Selection	Rhizoctonia* Brown patch disease rating
1. Citation	6.6
2. Yorktown II	6.4
3. Blazer	6.2
4. Fiesta	6.1
5. Diplomat	6.0
6. Birdie	6.0
7. Dasher	5.8
8. Omega	5.8
9. Pennfine	5.8
10. Derby	5.7
11. Manhattan	5.0
12. Yorktown	4.9
13. NK 200	3.2
14. Sprinter	3.2
15. S-321	3.0
16. Eton	2.9
17. Servo	2.9
18. Linn	2.7
19. Pelo	2.5
20. Sportiva	2.4
21. Caprice	2.3
22. NK 100	2.3
23. Ensporta	2.2
24. Game	2.2
25. Endura	2.1
26. Compas	2.0
27. Splendor	2.0
28. Combi	1.8
29. Perma	1.7
LSD .05	0.5

*Disease incited by Rhizoctonia solani. Ratings taken August 9, 1976.

Table 15. Reaction of perennial ryegrass cultivars and selections to the Rhizoctonia brown patch disease in turf trials established August 1976 at North Brunswick, New Jersey.

Cultivar of Selection	Rhizoctonia brown patch disease rating 9 = least disease
1. Blazer	6.6
2. Yorktown II	6.5
3. Fiesta	6.5
4. Citation	6.4
5. Belle	6.2
6. Dasher	5.8
7. Diplomat	5.7
8. Derby	5.5
9. Birdie	5.5
10. Omega	5.4
11. Regal	5.4
12. Pennfine	5.2
13. Manhattan	4.8
14. Yorktown	4.4
15. Idole	3.8
16. Score	3.4
17. S-321	1.9
18. S-101	1.8
LSD .05	0.6

*Disease incited by Rhizoctonia solani. Ratings taken August 22, 1977.

Table 16. Reaction of perennial ryegrass cultivars and selections to Rhizoctonia brown patch disease in test planted August 30, 1977 at Adelphia, New Jersey.

Cultivar or selection	Disease rating* 9 = least damage
1. Blazer	7.4
2. Yorktown II	7.0
3. Fiesta	7.0
4. Citation	7.0
5. Dasher	6.9
6. Belle	6.8
7. Diplomat	6.6
8. Regal	6.3
9. Derby	6.2
10. Omega	6.0
11. Birdie	5.9
12. Pennfine	5.8
13. Manhattan	5.0
14. Loretta	4.9
15. Score	3.1
16. NK100	3.1
17. Hunter	3.0
18. Caravelle	2.9
19. Sprinter	2.5
20. NK200	2.1
21. Linn	2.0
22. Venlona	1.9
23. S-321	1.9
24. Ensporta	1.8
25. S-101	1.7
LSD at 5%	0.6

*Ratings obtained August 25, 1978.

Table17 . Reaction of perennial ryegrass cultivars and selections to the winter brown blight disease incited by Helminthosporium siccans in turf trials seeded August 1974 at North Brunswick, New Jersey.

Cultivar or selection	Brown blight* disease rating 9 = least disease
1. Manhattan	7.6
2. Yorktown II	7.4
3. Blazer	7.3
4. Yorktown	7.2
5. Pelo	7.0
6. Diplomat	6.8
7. Omega	6.7
8. Fiesta	6.0
9. Dasher	5.8
10. NK200	5.0
11. S-321	5.0
12. Game	5.0
13. NK100	5.0
14. Eton	4.7
15. Derby	4.6
16. Linn	4.3
17. Birdie	4.2
18. Pennfine	4.0
19. Citation	3.6
20. Ensporta	3.0
LSD .05	0.9

* Ratings obtained December 27, 1974.

Table 18. Brown blight ratings of perennial ryegrass cultivars and selections in turf trials at Hubbard, Oregon.

Cultivar or selection	Brown blight* percent damage Dec. 16 1977	Feb. 3 1978	Avg.
1. S-101	45.0	45.0	45.0
2. NK-200	40.0	48.3	44.2
3. Citation	36.6	34.2	35.4
4. Linn	25.0	28.3	26.7
5. Pennfine	22.7	29.2	25.0
6. Fiesta	25.0	23.3	24.2
7. Birdie	21.0	23.3	22.2
8. Loretta	17.5	25.0	21.3
9. Derby	19.3	20.0	19.7
10. Dasher	15.7	22.3	19.0
11. Manhattan	18.3	17.8	18.1
12. Regal	18.3	16.0	17.2
13. Belle	16.0	18.3	17.2
14. Pelo	13.0	18.3	15.7
15. Omega	14.5	16.5	15.5
16. Caravelle	13.0	15.7	14.4
17. Yorktown II	11.7	15.7	13.7
18. Blazer	10.0	13.3	11.7
LSD at 5%			5.4

*Brown blight incited by Helminthosporium siccans

Table 19. Turf performance of perennial ryegrass cultivars and selections in turf trials at Hubbard, Oregon.

Cultivar or selection	Turf performance score 9 = best				
	Sept. 19 1977	Nov. 7 1977	Dec. 16 1977	Feb. 3 1978	Avg.
1. Blazer	7.7	7.7	7.3	7.3	7.5
2. Belle	7.7	7.3	6.7	7.0	7.2
3. Omega	7.4	7.5	6.5	6.9	7.1
4. Yorktown II	7.3	6.7	7.0	7.0	7.0
5. Regal	7.0	7.0	6.0	6.3	6.6
6. Dasher	7.3	6.7	6.0	6.3	6.6
7. Birdie	8.0	6.7	6.0	5.7	6.6
8. Manhattan	7.2	6.5	6.0	6.2	6.5
9. Fiesta	7.7	6.7	5.7	6.0	6.5
10. Derby	7.0	6.3	6.0	6.3	6.4
11. Loretta	7.0	6.5	6.0	6.0	6.4
12. Pennfine	7.0	7.0	6.0	5.5	6.4
13. Citation	6.7	6.9	5.3	5.0	6.0
14. Caravelle	6.7	6.3	5.0	5.7	5.9
15. NK-200	6.0	6.0	5.0	4.0	5.3
16. Linn	7.3	4.0	4.0	4.3	4.9
17. S-101	7.7	4.0	3.3	3.3	4.6
18. Pelo	5.3	4.3	4.0	4.3	4.5
LSD at 5%					0.8

Table 20. Performance of different seed lots of Blazer perennial ryegrass in turf trials seeded September 13, 1977 at Adelphia, New Jersey.

	Turf performance score 9 = best												
Seed lot	Dec. 2 1977	Mar. 22 1978	Apr. 14 1978	May 12 1978	May 25 1978	June 13 1978	Aug. 29 1978	Sept. 11 1978	Oct. 6 1978	Oct. 30 1978	Nov. 4 1978	Nov. 17 1978	Avg.
Foundation	7.7	5.9	6.7	8.0	7.9	5.5	6.4	7.5	7.3	8.0	7.7	7.5	7.2
Breeders	8.0	5.7	7.0	8.0	8.0	6.0	6.7	7.0	7.3	7.7	8.0	7.0	7.2
LSD .05	ns*	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns

*Differences are not statistically significant at the 5 percent probability level.

Table 21. Performance of perennial ryegrass cultivars and selections at Adelphia, New Jersey in turf trials seeded September 1977. Trials received moderate maintenance and were mowed at 4 cm.

Entry	Turf performance score 9 = best												
	1977	1978											
	Dec. 2	Mar. 22	Apr. 14	May 12	May 25	June 13	Aug. 29	Sept. 11	Oct. 6	Oct. 30	Nov. 4	Nov. 17	Avg.
1. Blazer	7.8	5.8	6.8	8.0	7.9	5.7	6.5	7.3	7.3	7.9	7.8	7.3	7.2
2. Yorktown II	7.7	6.0	6.0	8.0	8.0	5.3	5.3	6.7	7.0	7.7	6.7	7.0	6.8
3. Fiesta	7.9	5.8	6.7	7.2	6.0	5.1	6.6	7.6	7.3	7.3	7.6	7.1	6.8
4. Diplomat	7.0	6.3	6.0	7.3	7.3	5.0	6.0	7.0	6.3	7.7	7.3	7.0	6.7
5. Dasher	7.7	5.9	6.8	7.0	5.7	5.6	6.4	7.1	6.8	7.4	7.2	7.0	6.7
6. Belle	8.0	5.3	7.0	7.3	5.7	5.0	5.7	7.0	7.7	7.3	7.3	7.0	6.7
7. Derby	7.2	5.9	6.5	6.7	5.7	5.5	6.2	7.2	6.7	7.2	7.2	6.5	6.5
8. Loretta	6.7	5.3	5.3	8.0	8.0	6.7	5.0	6.3	6.0	6.7	7.0	6.7	6.5
9. Omega	8.0	6.0	6.0	7.7	6.7	5.0	6.0	6.7	5.7	7.0	6.7	7.0	6.5
10. Citation	7.0	5.7	6.7	6.7	5.0	5.0	6.3	7.0	7.3	6.7	6.7	6.3	6.4
11. Manhattan	7.2	5.7	5.5	7.0	7.0	5.2	5.7	6.0	6.0	7.0	6.7	6.2	6.3
12. Pennfine	7.0	6.0	6.0	6.3	5.7	5.0	5.7	7.3	6.7	7.3	7.0	6.0	6.3
13. Regal	7.3	5.7	6.3	7.0	5.7	6.0	5.7	6.3	6.0	6.7	6.0	6.3	6.3
14. Birdie	7.0	5.7	6.3	6.7	5.7	4.3	5.3	6.7	6.0	7.0	7.0	6.0	6.1
15. Caravelle	7.0	5.3	4.7	7.7	8.0	5.7	4.0	4.0	5.3	6.0	6.0	6.0	5.8
16. Score	4.0	4.7	5.7	7.0	7.3	5.0	4.0	4.3	5.0	6.0	5.7	5.7	5.4
17. NK-200	6.7	5.7	6.3	6.0	7.0	5.7	4.3	4.0	4.0	5.3	5.3	4.7	5.4
18. Sprinter	5.3	5.0	5.3	7.0	7.3	5.0	4.3	3.7	4.7	5.3	5.0	4.0	5.2
19. NK-100	3.7	4.7	4.7	5.0	4.3	4.3	4.3	3.3	4.0	5.7	5.0	3.7	4.4
20. Venlona	5.0	5.0	5.0	4.5	4.0	4.5	3.0	2.5	4.0	4.0	4.0	3.0	4.0
21. Ensporta	4.0	3.3	3.7	5.7	6.7	4.7	2.3	1.7	3.0	4.0	3.7	3.7	3.9
22. Linn	3.0	3.3	2.3	2.3	2.0	3.0	2.0	2.3	2.3	2.3	2.3	2.0	2.4
$LSD_{0.5}$=	0.8	0.8	0.8	0.6	0.8	0.7	1.0	0.9	1.1	1.0	1.1	1.3	

Table 22. Reaction of perennial ryegrass cultivars and selections to crown rust in turf trials near Hubbard, Oregon.

Cultivar or selection	Percent crown rust October 3, 1978
1. Loretta	0.0
2. Yorktown II	0.7
3. Birdie	1.0
4. Blazer	1.3
5. Belle	3.7
6. Dasher	3.7
7. Fiesta	4.0
8. Pelo	4.0
9. S-101	5.0
10. Caravelle	10.0
11. Pennfine	13.0
12. Linn	14.0
13. Citation	15.8
14. Omega	16.0
15. Manhattan	16.4
16. Derby	23.3
17. Regal	28.3
18. NK-200	35.0
LSD at 5%	---

*Crown rust incited by Puccinia coronata

FORM APPROVED: OMB NO. 40-R3712

FORM GR-470-36
(9-76)

U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
GRAIN DIVISION
HYATTSVILLE, MARYLAND 20782

OBJECTIVE DESCRIPTION OF CULTIVARS
RYEGRASS
(Lolium spp.)

NAME OF APPLICANT(S)	VARIETY NAME OR TEMPORARY DESIGNATION
PICKSEED WEST, INC.	BLAZER
ADDRESS *(Street and No., or R.F.D. No., City, State, and ZIP Code)*	FOR OFFICIAL USE ONLY
BOX 888, TANGENT, OREGON 97389	PVPO NUMBER 7900050

Place the appropriate number that describes the varietal character of this variety in the boxes below. Place a zero in first box (e.g. [0][8][9] or [0][9])when number if either 99 or less or 9 or less. Descriptions of characters should represent those that are typical for the variety. Ranges may be given also. Measured data should be for SPACED PLANTS. Give additional description for all characteristics that cannot be adequately described in the form below. Append all petrinent comparative trial and evaluation data.

1. SPECIES:

[2] 1 = L. MULTIFLORUM (annual or Italian: includes Westerwoldicum) 2 = L. PERENNE (perennial) 3 = L. RIGIDUM (includes Wimmera)
4 = HYBRID (of species) _____ 5 = OTHER *(Specify)* _____

2. PLOIDY:

[1] 1 = DIPLOID 2 = TETRAPLOID 3 = OTHER *(Specify)* _____

3. DURATION:

[3] 1 = ANNUAL OR BIENNIAL 2 = SHORT LIVED PERENNIAL (3-4 years) 3 = PERENNIAL (more than 4 years)

STANDARD CULTIVARS

1 = GULF 2 = WIMMERA 62 3 = LINN 4 = PELO
5 = NORLEA 6 = ABERYSTWYTH S-23 7 = MANHATTAN 8 = PENNFINE

4. MATURITY (50% HEADED) Use standards from above for comparison:

[6] 1 = VERY EARLY 3 = EARLY 5 = MEDIUM 7 = LATE 9 = VERY LATE

[5] DAYS EARLIER THAN . . . . . [7] STANDARD CULTIVAR
[20] DAYS LATER THAN . . . . . [8] STANDARD CULTIVAR

5. MATURE PLANT HEIGHT (Use standard cultivars from above) :

[76.8] CM. HIGH [16] CM. SHORTER THAN . . . . . [7] STANDARD CULTIVAR
[ ] CM. TALLER THAN . . . . . [ ] STANDARD CULTIVAR

6. PERCENT WINTER DAMAGE (estimated as percent of the area appearing dead). Use standard cultivars from above for comparison:

[0] PERCENT DAMAGE OF APPLICATION CULTIVAR
[ ] PERCENT DAMAGE OF . . . . . [ ] STANDARD CULTIVAR

7. TURF DENSITY Use standard cultivars from above:

[558] TILLERS PER 100 SQ. CM.
[ ] LESS TILLERS PER 100 SQ. CM. THAN . . . . [ ] STANDARD CULTIVAR
[111] MORE TILLERS PER 100 SQ. CM. THAN . . . [8] STANDARD CULTIVAR

8. FLAG LEAF (at full growth) Use standard cultivars from above:

[180] CM. LENGTH (from ligule to tip) [5.9] MM. WIDTH (at widest point)
[02] CM. SHORTER THAN . . . . . [7] STANDARD CULTIVAR
[ ] CM. LONGER THAN . . . . . [ ] STANDARD CULTIVAR
[0.8] MM. NARROWER THAN . . . . . [8] STANDARD CULTIVAR
[0.0] MM. WIDER THAN . . . . . [7] STANDARD CULTIVAR

[ ] FLAG LEAF AT BOOT STAGE: 1 = DEFLEXED 3 = RECURVED 5 = HORIZONTAL 7 = SEMI-ERECT 9 = ERECT

STANDARD CULTIVARS

1 = GULF 2 = WIMMERA 62 3 = LINN 4 = PELO
5 = NORLEA 6 = ABERYSTWYTH S-23 7 = MANHATTAN 8 = PENNFINE

9. LEAVES:

[3] VERNATION: 1 = LEAVES ROLLED IN YOUNG SHOOTS
2 = LEAVES SEMI-ROLLED (folded with rolled edges)
3 = LEAVES FOLDED IN YOUNG SHOOTS

[1 0 0] % PLANTS WITH ANTHOCYANIN IN LOWER LEAF SHEATH

[3] FOLIAGE COLOR: 1 = YELLOW GREEN 2 = MEDIUM GREEN 3 = BLUE GREEN

10. SPIKE:

[2 2 3] MM. SPIKE LENGTH (tip to internode below lowest floret)

[1 2] MM. SHORTER THAN . . . . . [8]
[ ] MM. LONGER THAN . . . . . [ ]
} USE STANDARD CULTIVARS FROM ABOVE

[1 0 8 0] MG. PER TEN SPIKES (trimmed to internode below lowest floret)

[1 5 2 0] MG. LIGHTER PER TEN SPIKES THAN . . . . [8]
[4 1 0] MG. HEAVIER PER TEN SPIKES THAN . . . . . [7]
} USE STANDARD CULTIVARS FROM ABOVE

[9.5] FLORETS PER SPIKELET

PERCENTAGE OF PLANTS WITH:

RACHIS: [ ] % SMOOTH [ ] % ROUGH

SPIKE COLOR: [9 0] % GREEN [1 0] % PURPLE

LEMMA: [0] % AWNED [ ] MM. AWN LENGTH

[7.2] MM. GLUME LENGTH [ ] 1 = SPIKELET LENGTH NEARLY EQUAL TO OUTER GLUMES
2 = SPIKELET LENGTH MUCH LONGER THAN OUTER GLUMES

11. COLEOPTILE:

[1 0 0] % PLANTS WITH ANTHOCYANIN IN COLEOPTILE

12. ANTHER COLOR:

[9] % PLANTS WITH WHITE ANTHERS [8 2] % PLANTS WITH YELLOW ANTHERS

[9] % PLANTS WITH PURPLE ANTHERS

13. ROOT AND PLANT CHARACTERS:

[1 0 0] % PLANTS WITH PROSTRATE GROWTH HABIT [0] % PLANTS WITH FLUROESCENT ROOTS

[0] % PLANTS WITH UPRIGHT GROWTH HABIT

14. SEED:

[1 2 0 0] MG. PER 1,000 SEED [5 6.1] MM. TOTAL LENGTH OF 10 SEEDS [1 2.6] MM. TOTAL WIDTH OF TEN SEEDS

rec'd
2/28/79 3:30 pm

15. DISEASE (0 = NOT TESTED, 2 = HIGHLY SUSCEPTIBLE, 4 = MODERATELY SUSCEPTIBLE, 6 = MODERATELY RESISTANT, 8 = HIGHLY RESISTANT):

4	CROWN RUST (Puccinia coronata)	0	DOLLAR SPOT (Sclerotinia)	6	BROWN PATCH (Rhizoctonia)
7	LEAF SPOT (Helminthosporium)	8	MILDEW	0	OTHER *(Specify)*
0	SNOW MOLD (Typhula)	0	RED THREAD (Corticium)		

16. INSECT (0 = NOT TESTED, 2 = HIGHLY SUSCEPTIBLE, 4 = MODERATELY SUSCEPTIBLE, 6 = MODERATELY RESISTANT, 8 = HIGHLY RESISTANT):

0 *(Specify)* _____

17. GIVE RESEMBLANCE VALUE IN LEFT COLUMN AND VARIETY CODE NUMBER IN RIGHT COLUMN FOR VARIETY WITH WHICH COMPARISON IS MADE (1 = LESS THAN, 2 = SAME AS, 3 = MORE ERECT, MORE RESISTANT, DENSER, MORE PERSISTENT, DARKER OR GREATER HEIGHT.):

RESEMBLANCE	CHARACTER	SIMILAR VARIETY	
1	PLANT HABIT (erectness)	8	1 = GULF
3	TILLERING	8	2 = WIMMERA 62
3	WINTER HARDINESS	8	3 = LINN
3	HIGH TEMP. STRESS RESISTANCE	7	4 = PELO
2	TURF PERSISTENCE	8	5 = NORLEA
3	PLANT COLOR	8	6 = ABERYSTWYTH S-23
2	VERTICAL SEEDLING GROWTH RATE	7	7 = MANHATTAN
3	CROWN DENSITY	8	8 = PENNFINE
2	MOWER SHREDDING RESISTANCE	8	

18. GIVE AREA OF ADAPTATION AND INTENDED USE: NEW JERSEY AND SURROUNDING AREAS

19. GIVE AREA TEST RESULTS PRESENTED FROM: NEW JERSEY, OREGON

COMMENTS:

ASSIGNMENT OF BLAZER PERENNIAL RYEGRASS

WHEREAS, William K. Dickson, 20 Kate Terrace, Piscataway, New Jersey, Ralph E. Engel, 407 West Lawrence Street, North Brunswick, New Jersey, Cyril R. Funk, Jr., 4 Delaware Drive, East Brunswick, New Jersey and W. Kent Wiley, Box 888, Tangent, Oregon have cooperatedin the breeding and development of 'Blazer' perennial ryegrass (Pickseed R-34)

NOW, THEREFORE, in consideration of one ($1.00) DOLLAR and other valuable considerations made to each of us by Pickseed West, Inc. including those designated in our Agreement of October 23, 1975,we hereby assign unto the said Pickseed West, Inc. our entire interest in Blazer perennial ryegrass for the United States and all foreign countries and any plant variety protection to be issued therefore in the United States or any foreign country. The Commissioner, Plant Variety Protection Office is requested to issue the plant variety protection certificate in accordance herewith.

EXECUTED Feb. 1, 1979
STATE OF NEW JERSEY

William K. Dickson
WILLIAM K. DICKSON

COUNTY OF MIDDLESEX

Before me a Notary Public for said County, personally appeared W.K. Dickson known to mbe to be the person who executed and acknowledged it to be his free act and deed.

WITNESS my hand and seal February 1, 1979
Aida Bianca
Notary Public

Commission expires March 29, 1982

EXECUTED February 1, 1979
STATE OF NEW JERSEY

Ralph E Engel
RALPH E. ENGEL

COUNTY OF MIDDLESEX

Before me a Notary Public for said County, personally appeared R.E. Engel known to me to be the person who executed and acknowledged it to be his free act and deed.

WITNESS my hand and seal February 1, 1979
Aida Bianca
Notary Public

Commission expires March 29, 1982

EXECUTED February 1, 1979
STATE OF NEW JERSEY

Cyril R. Funk Jr.
CYRIL R. FUNK, JR.

COUNTY OF MIDDLESEX

Before me a Notary Public for said County, personally appeared C.R. Funk, Jr. known to me to be the person who executed and acknowledged it to be his free act and deed.

WITNESS my hand and seal February 1, 1982

Aida Bianca
Notary Public

Commission expires March 29, 1982

EXECUTED Feb 19 '79
STATE OF OREGON

W. KENT WILEY

COUNTY Linn

Before me a Notary Public for said County, personally appeared W. Kent Wiley known to me to be the person who executed and acknowledged it to be his free act and deed.

WITNESS my hand and seal

Feb 19 79
Notary Public

Commission expires 1-25-82